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# PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### Improvements relating to Radiators Resiliently Secured in Motor Vehicles

5 We, DAIMLER-BENZ AKTIENGESellschaft, of Stuttgart-Untertürkheim, Germany, a Company organised under the laws of Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention concerns improvements relating to radiators resiliently secured in motor vehicles. With a known resilient three-point mounting, the radiator is, on the one hand, held by shaped rubber blocks in vertical guides on a part fixed to the vehicle frame and, on the other hand, is secured in a rubber mounting which affords resilient support in all directions and fixes the radiator to the frame by means of a clamping screw. This mounting has the disadvantage that the radiator must always be mounted over a transverse bearer of the front part of the frame or additional arms must be provided on the said bearer to support the rubber mounting, which arms result in a considerable increase in cost and also detract from the ground clearance of the vehicle. The invention seeks to eliminate these disadvantages and to provide for improved resilient mounting of the radiator.

30 According to the invention, the radiator is located, over substantially the entire length of its side surfaces, in and/or transversely of the direction of travel, by resilient bars through which it is connected to a rigid part of the vehicle.

40 By the arrangement and shaping of the resilient bars, it is possible to dispense with additional members for vertically supporting the radiator on the vehicle frame, so that the manner in which the radiator is secured is largely independent of the construction of the said frame. The resilient bars absorb shocks from the vehicle and advantageously

damp any vibrations which occur. As the resilient bars extend for the entire length of the side surfaces of the radiator, separate air-guiding sheet-metal masking parts are no longer required. 45

Advantageously, the radiator has side guides and the resilient bars are received by supports which are fixed to a rigid part of the vehicle, the radiator, in its assembled condition, being inserted with its guides in the resilient bars and connected to the latter by means of screws, rivets or like securing means. 50 55

In one advantageous embodiment of the invention, the supports have, at each side surface of the radiator, an extension adapted to form a mounting for the radiator, the cross section of bead-like extensions of the resilient bars being shaped to conform to the said mountings and each of the side guides having a surface through which it is supported from a said mounting by said bead-like extension. In another such embodiment, the supports and the side guides are at a less distance apart at the lower end of the radiator than at the upper end. The radiator then has wedge-like support and guidance, so that separate mountings for supporting it vertically are no longer required and an advantageous reduction of cost is achieved. 60 65 70

Suitably, each of the supports has at least one hole and each of the resilient bars at least one stud-like projection which engages without play in a said hole. Alternatively, the resilient bars may be secured to the supports by adhesive, or by rivets or like securing means. 75

Resilient guidance of the radiator may be achieved by making the resilient bars of rectangular cross section and providing their surface towards the radiator with at least one prismatic guide extending longitudinally of the bar, the radiator also having at least one prismatic guide at each of its side surfaces. 80 85

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By the use of a plurality of prismatic guides on the radiator and/or on the resilient bars, any manufacturing tolerances can be conveniently compensated for during the assembly of the radiator, since the position in which the radiator is installed can be varied in the longitudinal direction of the vehicle. In another form, the resilient bars are of U-shaped cross-section, the flanges of each U-shaped bar having a different width. By interchanging the U-shaped bars, the position in which the radiator is installed can be varied in this case also.

Embodiments of the invention by way of example are illustrated in the accompanying drawing, in which:

Figure 1 is a front elevation, partly in section, of part of a resiliently secured radiator and

Figure 2 a side elevation thereof,

Figures 3 and 4 are sections to a larger scale on the lines III—III and IV—IV respectively in Figure 1,

Figure 5 is a section on the line V—V in Figure 2, also to a larger scale, and

Figure 6 is a section, taken similarly to Figure 4, of another embodiment of the invention.

Side guides 2 by which the radiator is located in resilient bars or mouldings 3 are provided on the radiator casing 1. The bars 3, which are of U-shaped cross section are received by supports 4 fixed to the vehicle frame. For securing the bars 3 to the supports 4, the latter are provided with holes 5 in which stud-like projections 6 (Figures 4 and 5) of the bars engage without play. The bars 3 are secured to the casing 1 by bolts 7 (Figure 3). The guides 2 have at their lower end towards the floor of the vehicle (not shown), inclined surfaces 8 (Figure 5) by which the radiator 1 is supported through bead-like extensions 9 of the resilient bars 3 on extensions 10 of the supports 4. Alternatively, the lower ends of the supports 4 and side guides 2 may be arranged closer together than their upper ends. In the further alternative arrangement shown in Figure 6, the resilient bars 3', which are of rectangular cross-section, have at least one prismatic guide portion 11. The bars 3' are connected to supports 4' in a manner which is not illustrated. The side guides 2' of the casing 1 are provided with one or more, as shown two, wedge-shaped grooves 12 corresponding in shape to the guides 11 on the bars 3'.

To permit of variation of the position of the radiator in the longitudinal direction of the vehicle, with the arrangement of Figures 1 to 5, the side flanges 13 and 14 of the U-section are made of different widths as shown in Figures 3 and 4. The position of the radiator can be changed by turning

the two bars 3 back to front. With the arrangement of Figure 6, adjustment is effected by positioning the guides 11 in selected grooves 12 in the guides 2' on the casing.

#### WHAT WE CLAIM IS:—

1. A motor vehicle with a resiliently secured radiator which is located, over substantially the entire length of its side surfaces, in and/or transversely of the direction of travel, by resilient bars through which it is connected to a rigid part of the vehicle.

2. A vehicle according to Claim 1, wherein the radiator has side guides and the resilient bars are received by supports fixed to the rigid part of the vehicle, the radiator being inserted with its guides into the said bars and connected to the latter by screws, rivets or like securing means.

3. A vehicle according to Claim 2, wherein the supports have, at each side surface of the radiator, an extension adapted to form a mounting for the radiator, the cross section of bead-like extensions of the resilient bars being shaped to conform to the said mountings and each of the said guides having a surface through which it is supported from a said mounting by said bead-like extension.

4. A vehicle according to Claim 2, wherein the supports and the side guides are at a less distance apart at the lower end of the radiator than at the upper end.

5. A vehicle according to Claim 2, 3 or 4, wherein each of the supports has at least one hole and each of the resilient bars at least one stud-like projection which engages without play in a said hole.

6. A vehicle according to any one of Claims 2 to 5, wherein the resilient bars are secured to the supports by adhesive, or by rivets or like securing means.

7. A vehicle according to Claim 1 or 2, wherein the resilient bars are of rectangular cross-section and their surfaces towards the radiator have at least one prismatic guide extending longitudinally of the bars.

8. A vehicle according to Claim 1, 2 or 7, wherein the radiator has at least one prismatic guide on each side surface.

9. A vehicle according to any one of Claims 1 to 6, wherein the resilient bars have a U-shaped cross-section.

10. A vehicle according to Claim 9, wherein the flanges of a said U-shaped resilient bar have different widths.

11. A vehicle with a resiliently mounted radiator substantially as hereinbefore described with reference to the accompanying drawing.

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1 SHEET This drawing is a reproduction of the Original on a reduced scale

